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| 10/689,565 | 10/20/2003 | Paul Underbrink | ST02010USU<br>(246-US-U1) | 8409 |

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| EXAMINER | |
|---|---|
| FOTAKIS, ARISTOCRATIS | |
| ART UNIT | PAPER NUMBER |
| 2611 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/689,565 | UNDERBRINK ET AL. | |
| | Examiner | Art Unit | |
| | ARISTOCRATIS FOTAKIS | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07/29/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1 - 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5 - 6, 9, 13- 14, 17 and 21 - 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman et al. (US 6,282,231) in view of Rodal (US 5,650,785).

Re claims 1 and 5:

As shown in figure 1, Norman et al. disclose a radio receiver apparatus in receipt of a spread spectrum radio signal having a first signal tracking channel and a second signal tracking channel (column 7, lines 20-32), comprising:

a demodulator (see column 4, lines 51- column 5, lines 1-2) that demodulates a first signal in the spread spectrum radio signal into the first signal tracking channel and a second signal in the spread spectrum radio signal into the second signal tracking channel;

a crosscorrelator (block 40 in figure 1) connected to the first tracking channel and the second tracking channel;

a signal processor (blocks 40 and 50 in figure 1) that identify a carrier wave jamming signal with the crosscorrelator that is in a mode to identify CW jamming signals (Col 7, Lines 14 – 27, 51 – 57 and Col 8, Lines 29 – 55);

a tracker (block 50 in figure 1) that tracks the carrier wave jamming signal; and

a signal canceller (block 60 in figure 1) subtracts the carrier wave jamming signal from the spread spectrum signal.

However, Norman does not specifically teach of the signal processor that identifies a carrier wave jamming signal with the crosscorrelator that is in a mode to identify carrier wave jamming signals and employs a fixed predetermined code for a pseudo random number (PRN) code.

Rodal discloses of a low power GPS receiver where a correlation system (#22, Fig.1) correlated the received signal with a sequence of bits provided by bit source (#32, Fig.1). Optionally, the bit source 32 may provide a substitute bit steam of all 1's, a random sequence of 0's and 1's, a pseudorandom sequence of 0's and 1's, or a fixed sequence of 0's and 1's (Col 5, Lines 46 - 67).

It would have been an obvious matter of design choice to correlate the received signal with a fixed predetermined code of all ones instead of the pseudorandom (PRN) sequence, since applicant has not disclosed that the correlation with a code of all ones solves any stated problem and it appears that the invention would perform equally well with the use of code of all ones as well as a PRN code as disclosed by Rodal.

Re claims 9 and 13:

As shown in figure 1, Norman et al. disclose a method of removing a carrier wave jamming signal from a spread spectrum signal having a first signal tracking channel and a second signal tracking channel (column 7, lines 20-33), comprising:

demodulating a first signal in the spread spectrum radio signal into the first signal tracking channel and a second signal in the spread spectrum radio signal into the second signal tracking channel (see column 4, lines 51- column 5, lines 1-2);

correlating the first tracking channel and the second tracking channel with a crosscorrelator (block 40 in figure 1);

changing the crosscorrelator from a cross-correlation identification mode to a carrier wave jamming identification mode (Col 7, Lines 14 – 27, 51 – 57 and Col 8, Lines 29 – 55);

computating a product of the first signal tracking channel and the second signal tracking channel to obtain a carrier wave jamming signal (blocks 40 and 50 in figure 1);

tracking the carrier wave jamming signal (block 50 in figure i); and

canceling the carrier wave jamming signal from the spread spectrum signal (block 60 in figure 1).

However, Norman does not specifically teach of the signal processor that identifies a carrier wave jamming signal with the crosscorrelator that is in a mode to identify carrier wave jamming signals and employs a fixed predetermined code for a pseudo random number (PRN) code.

Rodal discloses of a low power GPS receiver where a correlation system (#22, Fig.1) correlated the received signal with a sequence of bits provided by bit source (#32, Fig.1). Optionally, the bit source 32 may provide a substitute bit steam of all 1's, a random sequence of 0's and 1's, a pseudorandom sequence of 0's and 1's, or a fixed sequence of 0's and 1's (Col 5, Lines 46 - 67).

It would have been an obvious matter of design choice to correlate the received signal with a fixed predetermined code of all ones instead of the pseudorandom (PRN) sequence, since applicant has not disclosed that the correlation with a code of all ones

solves any stated problem and it appears that the invention would perform equally well with the use of code of all ones as well as a PRN code as disclosed by Rodal.

Re claims 17 and 21: As shown in figure 1, Norman et al. disclose a receiver in receipt of a spread spectrum radio signal having a first signal tracking channel and a second signal tracking channel (column 7, lines 20-33), comprising:

demodulation means (see column 4, lines 51- column 5, lines 1-2) for demodulating a first signal in the spread spectrum radio signal into the first signal tracking channel and a second signal in the spread spectrum radio signal into the second signal tracking channel;

correlation means for correlating the first tracking channel and the second tracking channel (block 40 in figure 1);

computation means for computing a product of the first signal tracking channel and the second signal tracking channel to obtain a carrier wave jamming signal (blocks 40 and 50 in figure 1), when the the correlation means is in a carrier wave jamming identification mode (Col 7, Lines 14 – 27, 51 – 57 and Col 8, Lines 29 – 55);

means for tracking the carrier wave jamming signal (block 50 in figure 1); and

canceling means that cancels the carrier wave jamming signal from the spread spectrum signal (block 60 in figure 1).

However, Norman does not specifically teach of the signal processor that identifies a carrier wave jamming signal with the crosscorrelator that is in a mode to

identify carrier wave jamming signals and employs a fixed predetermined code for a pseudo random number (PRN) code.

Rodal discloses of a low power GPS receiver where a correlation system (#22, Fig.1) correlated the received signal with a sequence of bits provided by bit source (#32, Fig.1). Optionally, the bit source 32 may provide a substitute bit steam of all 1's, a random sequence of 0's and 1's, a pseudorandom sequence of 0's and 1's, or a fixed sequence of 0's and 1's (Col 5, Lines 46 - 67).

It would have been an obvious matter of design choice to correlate the received signal with a fixed predetermined code of all ones instead of the pseudorandom (PRN) sequence, since applicant has not disclosed that the correlation with a code of all ones solves any stated problem and it appears that the invention would perform equally well with the use of code of all ones as well as a PRN code as disclosed by Rodal.

Re claims 6, 14, 22:

Norman et al. further teach the spread spectrum radio signal is a position signal (column 7, lines 10-13).

Claims 2-4, 10-12 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman and Rodal in view of Heinzl et al. (US 2002/0012411).

Re claims 2, 10, 18:

Norman and Rodal disclose all of the subject matters in claim 1 above except for a signal generator that generates a replica carrier wave jamming signal having a phase from the carrier wave jamming signal having another phase and subtracts the replica carrier wave jamming signal from the spread spectrum signal to cancel the carrier wave jamming signal.

However, Heinzl et al. teach a signal generator that generates a replica carrier wave jamming signal and subtracts the replica carrier wave jamming signal from the spread spectrum signal to cancel the carrier wave jamming signal (page 1, paragraph [0011].

It is desirable to include a signal generator that generates a replica carrier wave jamming signal and subtracts the replica carrier wave jamming signal from the spread spectrum signal to cancel the carrier wave jamming signal to enable GPS and other RF navigation receivers to be structured flexibly to improve anti-jamming capability. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a signal generator that generates a replica carrier wave jamming signal and subtracts the replica carrier wave jamming signal from the spread spectrum signal to cancel the carrier wave jamming signal to provide improved resistance to jamming signals.

Re claims 3, 11, 19:

Heinzl et al. further teach a signal rotator that rotates the phase of the replica carrier wave jamming signal (page 3, paragraphs [0041] and [0042]).

Re claims 4, 12, 20:

Heinzl et al. further teach the signal rotator .adjusts the phase of the replica carrier wave jamming signal to match the other phase of the carrier wave jamming signal in the spread spectrum signal (page 3, paragraphs [0041] and [0042]).

Claims 7, 8, 15, 16, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman and Rodal in view of Van Stralen et ai. (US 6,621,855).

Re claims 7, 15, 23:

Norma and Rodal disclose all of the subject matter in claim 1 above except for crosscorrelator is at least a 1024 bit wide correlator.

However, Van Stralen et al. disclose crosscorrelator is at least a 1024 bit wide correlator (column 3, lines 45-50).

It is desirable to have a crosscorrelator is at least a 1024 bit wide correlator to improve the reliability of the detection of timing and frequency estimates especially when the signals are weak (column 11, lines 47-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a crosscorrelator is at least a 1024 bit wide correlator as taught by Van Stralen et al. in

the system as taught by Norman et al. to improve the reliability of the detection of timing and frequency estimates (column 11, lines 47-50).

Re claims 8, 16, 24:

Van Stralen et al. further teach the crosscorrelator includes an at least a 1024 bit wide match filter (column 3, lines 45-65).

It is desirable to have the crosscorrelator further includes an at least a 1024 bit wide match filter to improve the reliability of the detection of timing add frequency estimates especially when the signals are weak (column 11, lines 47-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the crosscorrelator includes an at least a 1024 bit wide match filter as taught by Van Stralen et al. in the system as taught by Norman et al. to improve the reliability of the detection of timing and frequency estimates (column 11, lines 47-50).

***Response to Arguments***

Applicants submit that Rodal patent does not teach or describe using a predetermined code of all ones for a PRN code in the correlator. The Rodal reference is teaching exchanging the stream of data that is processed by the correlator, rather than the code that is being correlated with the stream.

Examiner submits that Rodal teaches of a receiver that correlates a quantized IF signal (#20, Fig.1) with a code that can be either a PRN sequence or a stream of all 1's

or a fixed sequence of 0's and 1's. The reference clearly shows that any of those codes can be used to correlate the received signal. Therefore the §103 rejection made is proper.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristocratis Fotakis whose telephone number is (571) 270-1206. The examiner can normally be reached on Monday - Thursday 7 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aristocratis Fotakis/

Examiner, Art Unit 2611

/Chieh M Fan/

Supervisory Patent Examiner, Art Unit 2611